

them to discover if these bunches might correspond in any way with the "root tubercles" of recent plants. As only one such case has been recorded from the Coal Measures, the result is of special interest. These lateral roots are found to have a thick cortex divisible into two regions, the inner of which contains dark cells that show evident fungal hyphae. The fungus occurs in knots of non-septate hyphae that bear sometimes terminal vesicles, but there was no trace of any spore-formation. The conclusion is reached that "Cordaites was probably a tree inhabiting saline swamps, and having bunches of coralline rootlets on its roots, such as are known to occur in many recent plants growing under similar conditions."—J. M. C.

Anatomy of Equisetum.—EAMES³⁶ has discovered that although the xylem of Equisetum is centrifugal throughout the vegetative stem, it is also centripetal in the axial bundles of the strobilus and of the sporophylls; in the former the bundles are "weakly mesarch," in the latter "strongly so." This suggests that the most primitive representatives of Equisetales had well-developed centripetal wood, and connects them with such ancient forms as Sphenophyllales, already suggested by SCOTT'S discovery of centripetal wood in a calamite. All the large groups of pteridophytes are now known to possess centripetal wood, so that "such bundles in higher plants can be of no other phylogenetic value than as indicating general cryptogamic affinities." At the same time, Equisetum confirms the value of the leaf gap as a phylogenetic character, since in no case does the passage of a leaf trace from the stele leave a gap.—J. M. C.

Protection against light.—MARLOTH describes some very remarkable ways in which a few African desert plants reduce the amount of light which the green tissues of their leaves receive.³⁷ He refers to three categories: (1) plants with fleshy and green leaves, having membranous stipules which extend beyond and conceal them; (2) plants with fleshy and green leaves, without stipules, but invested by the dried-up remnants of the older leaves; (3) plants with windowed leaves. This most curious arrangement is characteristic of plants with very fleshy leaves whose blunt, plane, or erose tips alone reach the surface of the soil, the body of the leaf being completely buried. This exposed tip lacks chlorophyll, and through this as through a window the light reaches the green tissue, which is restricted to the sides of the fat leaf. Several species of Mesembryanthemum have this peculiarity.—C. R. B.

"Transpiration" in aquatics.—Under a similar misleading title THODAY and SYKES³⁸ present a brief account of a few experiments that show movement of

³⁶ EAMES, ARTHUR J., On the occurrence of centripetal xylem in Equisetum. *Annals of Botany* 23:587-601. *pl.* 45. 1909.

³⁷ MARLOTH, R., Die Schutzmittel der Pflanzen gegen übermässige Insolation. *Ber. Deutsch. Bot. Gesells.* 27:362-371. *figs.* 2. 1909.

³⁸ THODAY, D., AND SYKES, M. G., Preliminary observations on the transpiration current in submerged water-plants. *Annals of Botany* 23:635-637. 1909.